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March 16, 2022

EX PARTE PRESENTATION

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street NE
Washington, DC 20554

Re: Promoting the Deployment of 5G Open Radio Access Networks, GN Docket No. 21-63

Dear Ms. Dortch:

Pursuant to Section 1.1206 of the Commission's rules, 47 C.F.R. § 1.1206, DISH Network Corporation ("DISH") submits this letter summarizing a meeting by video conference on March 14, 2022 with FCC staff from several bureaus.[1] Present on behalf of DISH were Stephen Bye, Chief Commercial Officer; Marc Rouanne, Chief Network Officer; Jeffrey Blum, Executive Vice President, External and Legislative Affairs; Sidd Chenumolu, Vice President, Technology Development; Alison Minea, Vice President, Regulatory Affairs; William Beckwith, Director of Wireless Regulatory Affairs; Hadass Kogan, Director & Senior Counsel, Regulatory Affairs; and Michael Essington, Senior Manager, Public Policy.

At the request of FCC staff, DISH discussed its unique perspective on Open Radio Access Networks ("O-RAN") technology. Ahead of its June 14, 2022 buildout milestone, DISH is launching a first-of-its-kind, cloud native, virtualized O-RAN 5G network in several major metropolitan areas of the country. Because DISH is building a greenfield network, we have the flexibility to choose the best technology to enter the market. While legacy carriers built closed end-to-end networks, DISH chose O-RAN because, among other reasons, it offers lower capital and operating costs, and is more resilient, secure, and energy efficient. In cooperation with more than 30 technology partners, DISH will offer a real-world example of the benefits of O-RAN as our 5G network rolls out to customers this year. As DISH explained in its comments in this proceeding,[2] DISH welcomes the Commission's efforts to explore the benefits of this new architecture and encourages it to adopt policies that will help spur O-RAN adoption among American carriers.

If more American carriers see the benefits of O-RAN and are able to adopt it as their networks evolve, the United States will be a stronger competitor in the global market. O-RAN is a game changer, among reasons, because:

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[1] Present from the FCC were: Nicholas Copeland, Patrick DeGraba, Martin Doczkat, Paul Lafontaine, Cher Li, Charles Mathias, Catherine Matraves, Mark Montano, Kambiz Rahnavardy, Catherine Schroeder, Donald Stockdale, Patrick Sun, and Tom Tran.

[2] Comments of DISH Network Corporation, *Promoting the Deployment of 5G Open Radio Access Networks*, GN Docket No. 21-63, at 1 (April 28, 2021).

- **O-RAN networks increase vendor diversity:** Today, legacy RAN networks are closed ecosystems that utilize proprietary interfaces with radio units and baseband units at every cell tower, with no U.S.-based suppliers. The O-RAN model allows multiple vendors to coexist and compete within a single network. O-RAN liberates wireless operators of all sizes from reliance on a single vendor for all components of their network architecture. This, in turn, will enhance our nation's security by eliminating the "single point of failure" risk that exists in legacy networks today.

- **O-RAN enhances spectrum utilization and enables network slicing:** In the O-RAN model, there are standardized, open, and interoperable interfaces between the Radio Unit (RU), Central Unit (CU) and Distributed Units (DU). Through advances in radio and antenna technologies, as well as disaggregated hardware and software, radios are able to carry multiple spectrum bands. This allows 5G infrastructure to be leveraged and additional spectrum to be deployed and integrated into the 5G core network. In addition, by bringing together distributed cloud, edge computing, and network slicing, a software-based network can provide enterprise users with a customizable, secure network solution. Enterprise customers can manage and control their slice of the network and allocate spectrum as if it were privately operated.

- **O-RAN supports national security and cybersecurity objectives:** Widespread O-RAN adoption serves the United States' national interests, as well as the interests of allied nations. The ability to mix-and-match with different suppliers providing different components of the network can increase competition and prevent the "lock-in" effect where proprietary or semi-proprietary implementations of RAN components inhibit competition among suppliers. By embracing an O-RAN model, operators can eliminate their reliance on a single foreign-owned RAN provider.

- **O-RAN networks are more secure and more agile:** O-RAN networks are also more secure than traditional closed networks.[3] A key tenet of the DISH 5G security framework is a "zero-trust" model. Components of the our 5G security design include real-time threat identification and correlation, 5G network slice-based security support with a software chain of trust, and end-user controllability. These components improve threat detectability and the capability to automatically serve, act, and adapt. DISH's O-RAN 5G implementation will be more controllable, agile, and scalable than traditional networks.

DISH looks forward to continuing to work with the FCC and industry stakeholders to demonstrate the benefits of O-RAN and to help the United States lead the world in 5G technologies.

[3] *See* DISH Wireless White Paper, *DISH lays the foundation for 5G network security*, April 8, 2021, *available at* https://www.dishwireless.com/content/dam/wholesale/Whitepaper_040721_Digital.pdf.

/s/ Jeffrey H. Blum
Jeffrey H. Blum

cc: Nicholas Copeland
Patrick DeGraba
Martin Doczkat
Paul Lafontaine
Cher Li
Charles Mathias
Catherine Matraves
Mark Montano
Kambiz Rahnavardy
Catherine Schroeder
Donald Stockdale
Patrick Sun
Tom Tran

Enclosure: DISH Network Earnings Call Supplement, 4Q 2021, February 24, 2022

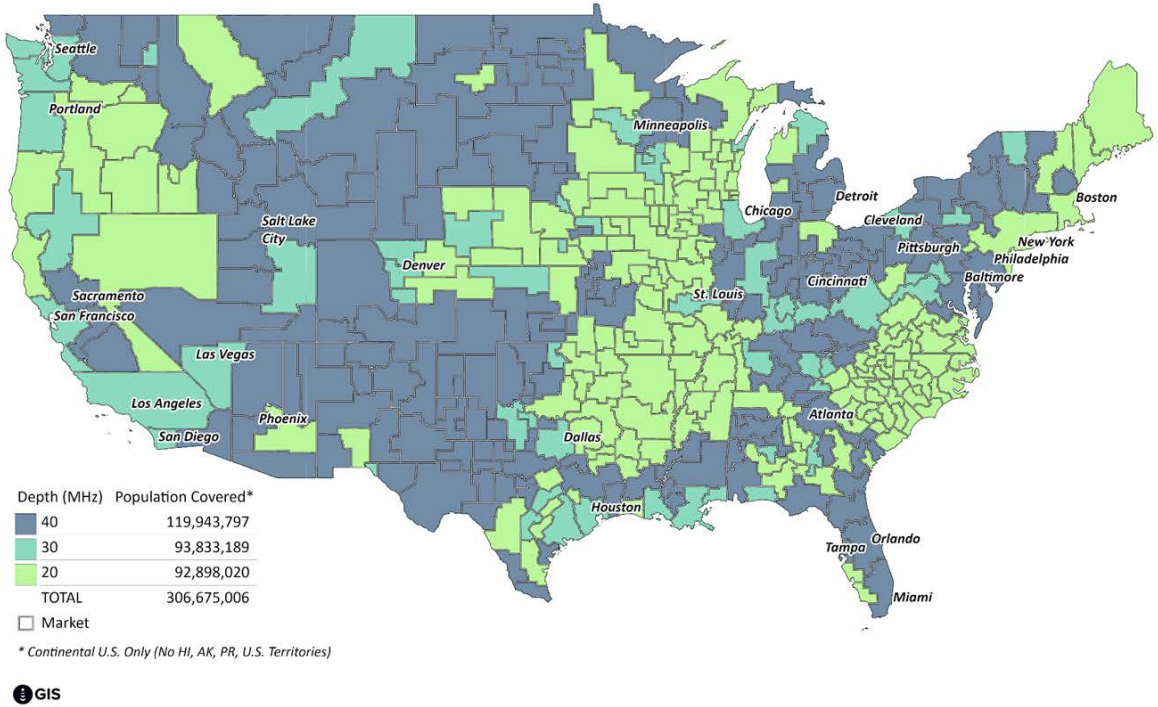
4Q 2021

DISH Network
Earnings Call Supplement

February 24, 2022

Information set forth in this presentation contains financial estimates and other forward looking statements that are subject to risks and uncertainties, and actual results might differ materially. A discussion of factors that may affect future results is contained in our filings with the Securities and Exchange Commission. We disclaim any obligation to update and revise statements contained in this presentation based on new information or otherwise.

Auction 110 Results: DISH Summary



- Total: $7.33B
- $/MP: $0.77
- 31 MHz Nationwide Depth
- 2nd largest winning bidder
- Nationwide footprint across Continental U.S. – At least 20 MHz in all markets
- Assigned upper portion of the band – contiguous with CBRS holdings – in all markets

DISH C-Band Range - 3.45 GHz and CBRS

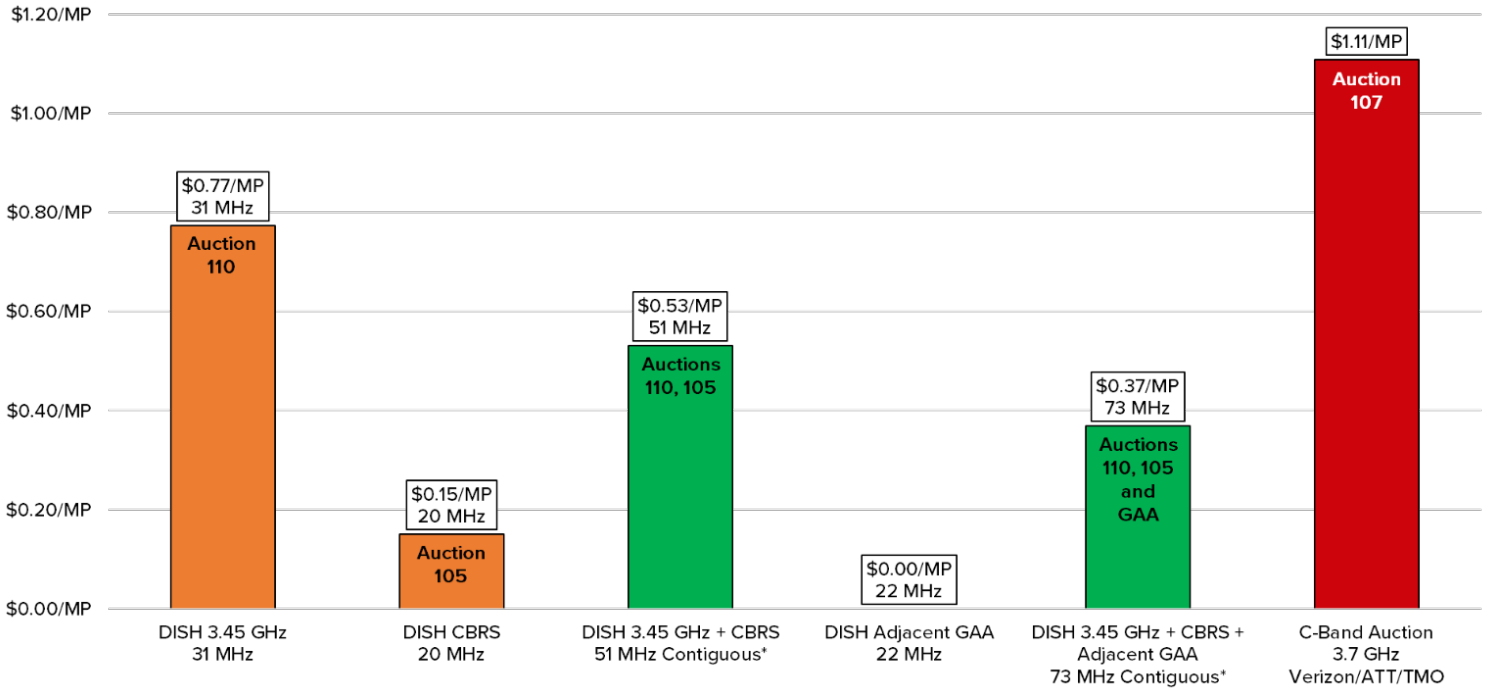
	3.45 GHz										CBRS														
	A	B	C	D	E	F	G	H	I	J	1	2	3	4	5	6	7	8	9	10	GAA**				
Freq Start	3450	3460	3470	3480	3490	3500	3510	3520	3530	3540	3550	3560	3570	3580	3590	3600	3610	3620	3630	3640	3650	3660	3670	3680	3690
Freq End	3460	3470	3480	3490	3500	3510	3520	3530	3540	3550	3560	3570	3580	3590	3600	3610	3620	3630	3640	3650	3660	3670	3680	3690	3700
							DISH Licensed Spectrum Range - Up to 80 MHz								Potentially Available for DISH Use - Up to 110 MHz										

DISH Average Holdings 73 MHz Contiguous 3520-3590 MHz	3.45 GHz C-Band 31 MHz	3.55 GHz CBRS PALs* 20 MHz	Adjacent Unassigned 22 MHz

*PAL – Priority License

**GAA – General Authorized Access – CBRS GAA is dynamically assigned, dedicated spectrum but requires authorization. GAA is divided among qualified infrastructure providers and must accept interference from Priority License operators.

C-Band Auction Results



*3.45 GHz and CBRS have different power levels

DISH Network: 5G Network Deployment Outlook

Major Metro Areas to be Launched Ahead of June 2022 20% Milestone

Albuquerque, NM
Charlotte, NC
Cleveland, OH
Columbus, OH
Dallas, TX
El Paso, TX
Fort Worth, TX
Hartford, CT
Houston, TX
Indianapolis, IN
Kansas City, KS
Las Vegas, NV
Nashville, TN
Norfolk, VA
Oklahoma City, OK
Orlando, FL
Raleigh-Durham, NC
Reno, NV
Richmond, VA
Rochester, NY
Salt Lake City, UT
Spokane, WA
Springfield, MA
St. Louis, MO
Stockton, CA
Syracuse, NY
Virginia Beach, VA

June 2022 Launch: Major Metro Areas

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Additional Cities to be Launched Ahead of June 2022 20% Milestone

Altoona, IA
Ames, IA
Ann Arbor, MI
Asheville, NC
Bay City, MI
Bellevue, NE
Bentonville, AR
Binghamton, NY
Boise, ID
Bowling Green, KY
Bristol, TN
Brooksville, FL
Brownsville, TX
Carson City, NV
Cary, NC
Casper, WY
Champaign, IL
Chattanooga, TN
Chester, VA
Cheyenne, WY
Chicopee, MA
Chippewa Falls, WI
Clarksville, TN
Cocoa Beach, FL
Concord, NC
Corpus Christi, TX
Davenport, IA
Daytona Beach, FL
Denton, TX
Des Moines, IA
Duluth, MN
Eagle, ID
Eau Claire, WI
Elmira, NY
Evansville, IN
Fayetteville, AR
Flagstaff, AZ
Flint, MI
Fond du Lac, WI
Fort Smith, AR
Fresno, CA
Gadsden, AL
Grand Junction, CO
Greensboro, NC
Gulfport, MS
Harrisonburg, VA
Hattiesburg, MS
Henderson, NV
Hendersonville, TN
High Point, NC
Hot Springs, AR
Huntsville, AL
Ithaca, NY
Jackson, MI
Jackson, MS
Johnson City, TN
Johnstown, PA
Kingsport, TN
Knoxville, TN
Lansing, MI
Lawton, OK
Lexington, TN
Lincoln, NE
Little Rock, AR
Louisville, TN
McAllen, TX
Mechanicsville, VA
Merced, CA
Meridian, ID
Middletown, CT
Midland, MI
Midlothian, VA
Modesto, CA
Murfreesboro, TN
New Braunfels, TX
Ocala, FL
Ogden, UT
Omaha, NE
Ozark, MO
Palm Bay, FL
Petersburg, VA
Pine Bluff, AR
Prescott, AZ
Provo, UT
Pueblo, CO
Rapid City, SD
Rochester, MN
Saginaw, MI
San Marcos, TX
Sioux City, IA
Sparks, NV
Springfield, IL
Springfield, MO
St. Joseph, MO
Staunton, VA
Suffolk, VA
Superior, WI
Texas City, TX
Tulsa, OK
Tuscaloosa, AL
Urbandale, IA
Utica, NY
Valdosta, GA
Victoria, TX
Watertown, NY
Waynesboro, VA
Wildwood, FL
Williamsburg, VA
Winter Garden, FL
Yuma, AZ

Additional Cities to be Launched Ahead of June 2022 20% Milestone

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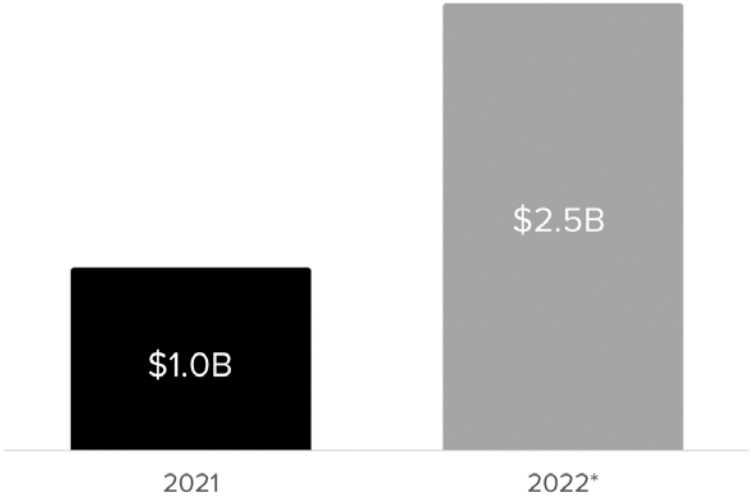
DISH Network: 5G Network Deployment Outlook

Wireless CapEx ($M)



* 2022 spend expected to be spread ratably throughout the year

DISH Network: 2Q22 Analyst Day

May 10th, 2022 | Caesars Forum - Las Vegas | Conference Center, Las Vegas, NV